

Technical Manager's Quarterly Report of Learning Technologies Project Status and Progress

For Q3 of FY2004 (May – July, 2004)

General

All four phase 2 LT projects have agreed-upon deliverables, plans and schedules, all of which are documented in individual project data sheets at <http://learn.arc.nasa.gov/pds>. The phase 1 deliverables of three of the projects are available to the public for web download at the same address above. Some of these have been recently updated with additional features or corrections.

The four project teams are working effectively against their deliverables and schedules. One team, Info Access, has successfully completed their work for FY 2004. Another team, What's The Difference, is near completion, ahead of schedule. The Virtual Lab team is on schedule and awaiting deliverables from their contractor, The Beckman Institute. The Animated Earth team has exhausted their funding prior to completing their FY 2004 deliverables, yet has produced useful and accessible material.

One of the project teams (Info Access and What's the Difference) has completed collaboration with Virtual Design Center (VDC) for educational-technology training. The Virtual Lab project and the What's The Difference project are near completion of VDC collaboration. The fourth project, Animated Earth, has not begun VDC collaboration and likely will not achieve it. (This issue is discussed below in the Animated Earth section.)

I demonstrated and discussed all four projects at an educator's conference at UCLA in June. The projects have also been demonstrated to many small groups either by me or Patrick Hogan, the Learning Technologies Program Director.

Animated Earth

After funding issue were resolved in March, this project team made progress towards its deliverables. The team has produced 12 animations and has created server software and a web site to make them publicly available. The LT Office is in the process of seeking independent review of the animations and their topics.

NASA WorldWind, the software application for viewing earth-information in 3D (software created by the LT Office), has been enhanced to retrieve the animations from the Digital Earth server at Goddard Space Flight Center, the home of the Animated Earth project, and display them within WorldWind.

The project's available animations are illustrated at <http://aes.gsfc.nasa.gov/documents/available.html>. It's an impressive list:

- China Dust Storm during April 2001.
- Tectonic Plates and Plate Boundaries.
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- Urbanization around the Pearl River Estuary in China from 1973 through 2001.
- Wildfire Growth around Yellowstone Park in 1988.
- Global Ozone during the 2003 Ozone Hole.
- Global Atmospheric Carbon Monoxide in 2000.
- GOES Imagery of Hurricane Luis.
- Cold Water Trails from Hurricanes Fabian and Isabel.
- Cumulative Earthquake Activity from 1980 through 1995.
- Satellite Imagery of Hurricane Dennis.
- African Fires during 2002.

Dr. Mitchell, the project's principal investigator, informed the LT Office on July 8 that the project has exhausted its LT funding, and no more work on the project is planned for FY 2004. This means that the required collaboration with VDC will not occur, and that the project will exit the funding year with 12 animations and a functioning but partially completed animation server. The project's Project Data Sheet has been updated to reflect this reality.

The team had recruited a scientist, David Batchelor, to assist the project. Given the exhaustion of the project's funding, it is not yet clear whether his effort will be applied to the project.

Information Accessibility

The team has met its FY 2004 deliverables. Math Description Engine (MDE) and MathTrax software was delivered on time and with high quality. Team member Stephanie Smith worked closely with Dr. Reese at Classroom of the Future to develop a learning experience that is being carried out this summer. The team has recruited an educational researcher to review feedback on MDE usage.

In FY 2004 the team developed the data-driven portion of the MDE software. This portion accepts, analyzes, describes and displays experimental data, in addition to the previously available capability of describing mathematical equations. The work will be tested during the Rocket Camp activity the team has planned for August 2004.

The Rocket Camp activity will take place at Goddard in August and will involve 12 blind students and six teachers. The students will plan and execute launchings of sounding rockets at the Wallops facility in Maryland, and will capture telemetry data from those rockets. Some of this data will be entered into an MDE-based application for analysis by the students.

The project team continues to express the need for curriculum to be developed around the MDE capabilities. I will be working with Patrick Hogan and COTF to pursue this. Also, there is currently no plan in place to offer user or developer support for MDE.

Virtual Laboratory

An RFP for additional instruments was published in February and five proposals were received in response. Berta Alfonso, the project's manager, selected The Beckman Institute's (at University of Illinois) proposal offering to develop several microscopy instruments. Berta has also accepted The Beckman Institute's additional proposal for 12 additional scanning electron microscope specimens for the existing (Phase 1) SEM virtual instrument. Three of these additional specimens have been delivered.

Berta is completing work with Dr. Reese of Classroom of the Future on the project's VDC collaboration. The partner for the VDC learning experience is an instructional designer within CTE, Enrique Garcia Moreno. The project is also working with the Brevard County School District (Florida) to use the virtual lab in classrooms.

The LT Office is exploring ways to enhance the performance of the current SEM virtual instrument.

The project has hired a teacher for the summer to determine the associations between the Virtual Lab capabilities and features and the national STEM standards.

With the exception of the VDC collaboration, the project is on schedule. The new instruments are expected to be delivered in FY 2005. The remaining SEM specimens are expected to be delivered during calendar year 2004.

What's The Difference?

The project deliverables are nearly complete and work is proceeding ahead of schedule. The software deliverables are fully functioning, with assessment tests, visuals, windowing, and data access complete. The Glossary section is nearly complete, and the Notes section is being evaluated for usability.

The primary project developer, Geoff Bruce, has also developed a software component that assists curriculum developers in producing content for WTD. This component was beyond that required by the project requirements, but was felt by Geoff to be a necessary component.

An extended team member is working with Dr. Reese of Classroom of the Future on the required Virtual Design Center collaboration. One section of the VDC training is left to complete. The project manager, Christina O'Guinn, feels strongly that the effort the team applied to VDC was not worth the return. The team found the results of the VDC collaboration to be of almost no use to them or the project, and the collaborative experience unpleasant.